

We claim:

1. An isolated nucleic acid molecule comprising a nucleotide sequence, wherein the nucleotide sequence or the complement of the nucleotide sequence encodes a polypeptide having in the N-terminal to C-terminal direction two AP2 DNA binding domains followed in the C-terminal by an amino acid subsequence selected from the group consisting of Xaa-Ser-Ser-Ser-Arg-Glu (SEQ ID NO: 25), Xaa-Ser-Asn-Ser-Arg-Glu (SEQ ID NO: 26), and Asn-Ser-Ser-Ser-Arg-Asn (SEQ ID NO: 27), wherein Xaa is an amino acid selected from the group consisting of Gly, Ala, Val, Leu, and Ile.
2. The isolated nucleic acid molecule of claim 1, wherein said amino acid subsequence is selected from the group consisting of Ser-Ser-Leu-Xaa-Thr-Ser-Xaa-Ser-Ser-Ser-Arg-Glu (SEQ ID NO: 28), Ser-Ser-Leu-Xaa-Pro-Ser-Xaa-Ser-Asn-Ser-Arg-Glu (SEQ ID NO: 29), Ser-Ser-Leu-Xaa-Thr-Ser-Xaa-Ser-Asn-Ser-Arg-Glu (SEQ ID NO: 30), and Ser-Leu-Xaa-Asn-Ser-Ser-Ser-Arg-Asn (SEQ ID NO: 31) wherein Xaa is an amino acid residue selected from the group consisting of Gly, Ala, Val, Leu, and Ile.
3. An isolated nucleic acid molecule comprising a nucleotide sequence, or its complement, which can encode a polypeptide having an amino acid sequence that is substantially identical to a sequence selected from group consisting of SEQ ID NOs: 2, 4, 6, 9, 11, and 13.
4. An isolated nucleic acid molecule comprising a nucleotide sequence, or its complement, which can hybridize under stringent conditions to a second nucleic acid sequence which can encode a protein with substantial identity to SEQ ID NOs: 2, 4, 6, 9, 11 and 13.
5. An isolated nucleic acid sequence which encodes an amino acid sequence comprising SEQ ID NOs: 2, 4, 6, 9, 11, or 13 containing conservative amino acid substitutions.
6. An isolated nucleic acid sequence which encodes an amino acid sequence comprising SEQ ID NOs: 2, 4, 6, 9, 11, or 13.
7. A recombinant DNA molecule that comprises, in the 5' to 3' direction:
  - (a) a first DNA polynucleotide that comprises a tissue specific promoter that functions in plants, operably linked to;
  - (b) a second DNA polynucleotide that encodes an ANT protein, operably linked to;
  - (c) a 3' transcription termination DNA polynucleotide;
 wherein said first DNA polynucleotide is heterologous to said second DNA polynucleotide.
8. A recombinant DNA molecule that comprises, in the 5' to 3' direction:
  - (a) a first DNA polynucleotide that comprises an inducible promoter that functions in plants, operably linked to;

(b) a second DNA polynucleotide that encodes an ANT protein, operably linked to;

(c) a 3' transcription termination DNA polynucleotide;

wherein said first DNA polynucleotide is heterologous to said second DNA polynucleotide.

9. A recombinant DNA molecule that comprises, in the 5' to 3' direction:

(a) a first DNA polynucleotide that comprises a promoter that functions in plants, operably linked to;

(b) a second DNA polynucleotide that encodes a crop ANT protein, operably linked to;

(c) a 3' transcription termination DNA polynucleotide;

wherein said first DNA polynucleotide is heterologous to said second DNA polynucleotide.

10. A plant cell containing in its genome a recombinant DNA molecule of claim 7.

11. A plant cell containing in its genome a recombinant DNA molecule of claim 8.

12. A plant cell containing in its genome a recombinant DNA molecule of claim 9.

13. A plant containing in its genome a recombinant DNA molecule of claim 7.

14. A plant containing in its genome a recombinant DNA molecule of claim 8.

15. A plant containing in its genome a recombinant DNA molecule of claim 9.

16. The propogules of said plant of claim 13.

17. The propogules of said plant of claim 14.

18. The propogules of said plant of claim 15.

19. A method for obtaining a nucleic acid molecule encoding all or a substantial portion of the amino

acid sequence of an *ANT*-like polypeptide comprising: (a) probing a cDNA or genomic library with a

hybridization probe comprising a nucleotide sequence encoding all or a substantial portion of the amino acid sequence of an *ANT*-like polypeptide, wherein the amino acid sequence of the *ANT*-like polypeptide is selected from the group consisting of SEQ ID Nos: 2, 4, 6, 9, 11, and 13; (b)

identifying a DNA clone that hybridizes under stringent conditions to the hybridization probe; (c)

isolating the DNA clone identified in step (b); and (d) sequencing the cDNA or genomic fragment that is contained in the clone isolated in step (c).

20. A method of producing a plant that has enhanced organ size, comprising the steps of:

a) inserting into the genome of a plant cell a recombinant DNA molecule comprising:

i) a first DNA polynucleotide that comprises a promoter that functions in plants, operably linked to;

ii) a second DNA polynucleotide that encodes a crop ANT protein, operably linked to;

iii) a transcription termination polynucleotide that functions in plants;

wherein said first DNA polynucleotide is heterologous to second DNA polynucleotide,

- b) obtaining a transformed plant cell; and
- c) regenerating a plant from said plant cell; and
- d) selecting said plant for increased organ size.

21. A plant with increased organ size produced by the method of claim 20.

22. A method of producing a plant that has increased organ size, comprising the steps of:

- a) inserting into the genome of a plant cell a recombinant DNA molecule comprising:
  - i) a first DNA polynucleotide that comprises a tissue specific promoter that functions in plants, operably linked to;
  - ii) a second DNA polynucleotide that encodes an ANT protein, operably linked to;
  - iii) a transcription termination polynucleotide that functions in plants;
 wherein said first DNA polynucleotide is heterologous to second DNA polynucleotide,

- b) obtaining a transformed plant cell; and
- c) regenerating a plant from said plant cell; and
- d) selecting said plant for increased organ size.

23. A plant with increased organ size produced by the method of claim 22.

24. A method of producing a plant that has increased organ size, comprising the steps of:

- a) inserting into the genome of a plant cell a recombinant DNA molecule comprising:
  - i) a first DNA polynucleotide that comprises an inducible promoter that functions in plants, operably linked to;
  - ii) a second DNA polynucleotide that encodes a ANT protein, operably linked to;
  - iii) a transcription termination polynucleotide that functions in plants;
 wherein said first DNA polynucleotide is heterologous to second DNA polynucleotide,

- b) obtaining a transformed plant cell; and
- c) regenerating a plant from said plant cell; and
- d) selecting said plant for increased organ size.

25. A plant with increased organ size produced by the method of claim 24.

26. A plant of claim 13 wherein said plant is selected from the group consisting of corn, soy, canola, wheat, cotton, tomato, and/or potato.

27. A plant of claim 14 wherein said plant is selected from the group consisting of corn, soy, canola, wheat, cotton, tomato, and/or potato.
28. A plant of claim 15 wherein said plant is selected from the group consisting of corn, soy, canola, wheat, cotton, tomato, and/or potato.
- 5 29. A process wherein a propogule of said plant of claim 13 is used to produce ethanol.
30. A process wherein a propogule of said plant of claim 14 is used to produce ethanol.
31. A process wherein a propogule of said plant of claim 15 is used to produce ethanol.
32. A process wherein a propogule of said plant of claim 13 is used to produce animal feed.
33. A process wherein a propogule of said plant of claim 14 is used to produce animal feed.
- 10 34. A process wherein a propogule of said plant of claim 15 is used to produce animal feed.

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